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Phonological priming in auditory word recognition :initial overlap facilitation effect varies as a function of target word frequency

Sophie Dufour and Ronald Peereman

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6 Studies on auditory word recognition indicate that the processing of a target word is influenced by the prior presentation of a phonologically related prime. Distinct effects have been identified depending on the location of the overlapping segments and on the extent to which primes and targets overlap. For primes that overlap with the final phonemes of targets (m*ean*-b*ean*), facilitation of processing has been reported (Dumay, Benraïss, Barriol, Colin, Radeau, & Besson, 2001; Monsell & Hirsh, 1998; Norris, McQueen, & Cutler, 2002; Radeau, Besson, Fontaneau, & Castro, 1998; Radeau, Morais, & Segui, 1995; Slowiaczek, McQueen, Soltano, & Lynch, 2000; Spinelli, Segui, & Radeau, 2001). This effect has been taken to reflect speech recognition processes which occur before lexical access.

7 The effects are more complex when primes overlap with the initial phonemes of targets. When primes overlap with all except the last phoneme of targets (*dress–drea*d), inhibition of processing has been observed (Dufour & Peereman, 2003a, 2003b; Hamburger & Slowiaczek, 1996, 1999; Slowiaczek & Hamburger, 1992). This inhibition has been interpreted as the result of competition between lexical candidates during the recognition process. In contrast, when primes overlap with targets by a smaller number

of phonemes (*d*ove-*d*read), a facilitatory effect has sometimes been reported (Goldinger, 1999; Goldinger, Luce, Pisoni, & Marcario, 1992; Hamburger & Slowiaczek, 1996, 1999; Slowiaczek & Hamburger, 1992; Spinelli et al., 2001). However, there are serious doubts as to whether this effect can inform us about cognitive processes that occur automatically during auditory word recognition. Indeed, several studies suggest that the initial overlap facilitation results from strategic processes that listeners develop when they become aware of the phonological relation between the primes and the targets (Goldinger et al., 1992; Hamburger and Slowiaczek, 1996, 1999). Nonetheless, recent data indicate that the effect could, under some conditions, reflect automatic processes occurring in normal speech recognition (Spinelli et al., 2001). In the present study, this latter issue was examined.

8 A strategic account for the initial overlap facilitation has been proposed by Hamburger and Slowiaczek (1996, 1999) in the light of results, which they had previously reported (Slowiaczek & Hamburger, 1992). Using monosyllabic words and the shadowing latencies as a measure, Slowiaczek and Hamburger (1992) observed that an initial overlap between primes and targets led to facilitation when the primes had one or two phonemes in common with the targets. In contrast, when the primes had more than two phonemes overlapping with the targets, an inhibitory rather than a facilitatory priming effect was reported. However, subsequent studies (Hamburger & Slowiaczek, 1996, 1999) revealed that the facilitatory effect only emerged under conditions that favored the development of strategic anticipations (with 75% of related prime-target pairs and 500 ms ISI). No facilitation of processing occurred under conditions intended to discourage the development of strategic processes (with 25% of related prime-target pairs and 50 ms ISI). Note that with 25% of related prime-target pairs and 50 ms ISI, strategic anticipations are not expected to occur, because an assumption by participants that the targets will begin with the same segments as their primes would tend to impair performance on three quarters of trials. Thus, it seems unlikely that participants exploit the phonological relation between the primes and the targets to improve their performance. Because facilitatory effects are more likely to occur when the experimental conditions maximize strategic anticipations, Hamburger and Slowiaczek (1996, 1999) concluded that response biases were responsible for the facilitation effect observed when the primes and the targets shared one or two phonemes. In such a condition, participants notice that the targets are likely to begin with the same segments as their primes and they anticipate *the first phonemes* of the targets, thus achieving faster responses on targets preceded by related primes.

9 In contrast to that finding, Spinelli et al. (2001) recently reported an initial overlap facilitation effect with 25% of related trials and 50 ms ISI. More specifically, the authors showed that the facilitation depended on the nature of the primes. A reliable facilitatory priming effect was found when bisyllabic targets (coulisse /kulis/) were preceded by monosyllabic primes (cou /ku/). This facilitation occurred in unimodal (auditory prime and target) lexical decision as well as in cross-modal (auditory prime and visual target) lexical decision and shadowing tasks. In contrast to monosyllabic primes, Spinelli et al. observed that bisyllabic primes (couture /kutyR/) produced no effect on the subsequent processing of bisyllabic targets (coulisse /kulis/) in cross-modal (auditory prime and visual target) lexical decision[1]. Thus, it appears that in a condition intended to discourage strategic processes, initial overlap facilitation can occur when the primes have no phoneme which is incompatible with the targets, namely when the primes correspond to

the first syllable of the targets (cou /ku/ - coulisse /kulis/). Conversely, in the case of phonemic incompatibility between the primes and the targets, — with bisyllabic primes (couture /kutyR/– coulisse /kulis/) — , no facilitation of processing is observed.

10 To account for their findings, Spinelli et al. (2001) proposed that fast automatic activation and deactivation of the lexical representations of the target words occur during the processing of the primes. Their interpretation is as follows. When the prime is monosyllabic (cou /ku/), the target word (coulisse /kulis/) receives activation from the prime and remains activated because there are no mismatching phonemes between the prime and the lexical representation of the target. Since the target word has been pre-activated and not deactivated, its subsequent processing is faster due to its residual activation. In contrast when the prime is bisyllabic (couture /kutyR/), the target word (coulisse /kulis/) is initially activated but starts to be deactivated as soon as the phonemes in the prime become incompatible with the lexical representation of the target (from the phoneme /t/ in the prime "couture /kutyR/"). As a result, at prime offset, the target is no longer activated and no facilitation of processing is observed. Note, however, that the monosyllabic primes tested by Spinelli et al. had a specific relationship with the related targets in that the primes (cou /ku/) always formed the first syllable of the target words (coulisse /kulis/). This relationship may have been exploited by participants, leading to the facilitation priming effect observed with monosyllabic primes[2].

11 The aim of the present study was to assess the hypothesis of automatic lexical activation in word-initial overlap facilitation in a condition intended to discourage the development of strategic processes (with 25% of related pairs and 50 ms ISI). According to this hypothesis, the magnitude of the facilitatory priming effect is related to the amount of residual activation of the target word after processing of the prime. If this assumption is true, then the facilitation priming effect would be expected to vary as a function of lexical factors such as word frequency. Such a prediction stems from most of models of spoken-word recognition (e.g. Marslen-Wilson, 1990; McClelland & Elman, 1986) that assume that frequency directly affects the activation levels of lexical candidates. More specifically, we hypothesized that facilitation priming effect should also occur with *bisyllabic primes* when the frequency of the target words is increased.Since high-frequency words are generally assumed to reach higher levels of activation, activation caused by the first phonemes of the primes should not have enough time to fully dissipate during the processing of mismatching phonemes in the primes. Such a hypothesis is even more likely given that a short ISI was used. In the present study, this prediction will be examined. Both the primes and the targets were presented auditorily because it was under such a condition that previous studies failed to observe a reliable facilitation priming effect when using a low proportion of related pairs and a short ISI. A shadowing task was used, rather than lexical decision, to avoid contamination by congruency-checking mechanisms that influence binary decision tasks (Balota & Chumbley, 1984; Norris et al., 2002; Radeau, Morais, & Dewier, 1989).

12 In Experiment 1, we re-examined the two priming conditions used by Spinelli et al. (2001) to confirm the generality of their effects. In the first condition ("monosyllabic" priming condition), bisyllabic target words (coulisse /kulis/) were preceded by monosyllabic prime words (cou /ku/). In the second condition ("bisyllabic" priming condition), both the prime and the target words were bisyllabic (couture /kutyR/ – coulisse /kulis/). In line with Spinelli et al., a priming effect was expected only for monosyllabic primes because they included no phoneme likely to result in the deactivation of the targets. No

effect was expected with bisyllabic primes because activation of the target words caused by the initial phonemes of the primes would have time to fully dissipate during the processing of the last phonemes of the primes.

13 Ninety-two students at the University of Bourgogne participated in the experiment for course credits. All participants were native speakers of French and reported no hearing or speech disorders. Half of them were tested in the "monosyllabic" priming condition and the other half were tested in the " bisyllabic" priming condition.

14 Given that in the Spinelli et al. (2001) study, the same primes were paired with different targets, only 19 of the prime-target pairs from their study were used. 27 other bisyllabic target words in the same frequency ranges as in Spinelli et al. were selected from BRULEX, a lexical database for the French language (Content, Mousty & Radeau, 1990). Four prime words were paired with each of these 46 target words: two were monosyllabic and were used in the "monosyllabic" priming condition; the other two were bisyllabic and were used in the "bisyllabic" priming condition. In each priming condition ("monosyllabic" and " bisyllabic"), one of the two primes was phonologically related to the target. They either corresponded to the first syllable of the target in the "monosyllabic" priming condition (cou /ku/ – coulisse /kulis/) or shared the first syllable with the target in the "bisyllabic" priming condition (couture /kutyR/ – coulisse /kulis/). In each priming condition ("monosyllabic" and "bisyllabic"), the other primes used as controls had no phoneme in common with the target (fond /fõ/ – coulisse /kulis/ for the "monosyllabic" priming condition and lacune /lakyn/ – coulisse /kulis/ for the " bisyllabic" priming condition). The prime-target pairs are provided in Appendix A.

15 The targets had a mean logarithmic frequency of 2.63 (range: 0.60-4.01). The mean logarithmic frequencies of related and control primes were 4.13 and 4.03, respectively, in the "monosyllabic" priming condition. The corresponding values in the " bisyllabic" priming condition were 2.58 and 2.57, respectively. The average duration of the targets was 533 ms. In the "monosyllabic" priming condition, the average durations of related and control primes were 331 and 350 ms, respectively. In the " bisyllabic" priming condition, the corresponding values were 504 and 511 ms, respectively. None of the frequency and duration differences was significant.

16 Because in each priming condition ("monosyllabic" and "bisyllabic"), each target was paired with two types of primes (related and control), and no subject was presented with the same target twice, two experimental lists were created for each priming condition. Each list included the 46 target words. Half of them were preceded by a related prime, the other half by a control prime. In each priming condition ("monosyllabic" and " bisyllabic"), the lists were counterbalanced in such a way that each target was preceded by the two types of prime. In order to achieve a proportion of related prime-target pairs of 25%, 46 filler trials without any relation between the primes and the targets were added in each list.

17 The stimuli were recorded by a female native speaker of French on a digital audio tape recorder. The items were digitized at a sampling rate of 44 kHz with 16-bit analog to digital recording. The participants were tested individually in a quiet room. The presentation of the items was controlled by an Apple computer. Reaction Times (RTs) were collected via a voice key connected to the computer. The primes and the targets were presented over headphones at a comfortable sound level. An interval of 50 ms (ISI) separated the offset of the prime and the onset of the target. The participants were asked to repeat the target as quickly and accurately as possible. The subject's response and the

onset of the prime of the following trial were separated by 2 seconds of silence. The shadowing latencies were measured from the onset of the target to the subject's response. In each priming condition ("monosyllabic" and "bisyllabic"), the participants were tested on only one experimental list and they began the experiment with a block of 16 practice trials.

18 Because of technical problems, four participants were excluded from the analyses (one in the "monosyllabic priming" condition and three in the "bisyllabic priming" condition). Two items were also removed from the analyses: for one item, the error rate was greater than 20%; for the other, the onset of subject responses were often undetected by the voice key. Mean RTs for correctly shadowed items and mean error rates are presented in Table 1. Analyses of Variance (ANOVA) by participants (F1) and by items (F2) were conducted with Priming Condition ("monosyllabic", "bisyllabic") and Prime Type (related, control) as variables. Because few errors occurred, only the RTs were submitted to ANOVAs.

Table 1: Mean Reaction Times (in ms) and Error Rates (in %) for Control and Related Primes as a function of Priming Condition in Experiment 1 (Standard Deviations are given in parentheses).

	Prime Type	
	Control	Related
Priming Condition		
Monosyllabic		
RT	777 (92)	762 (92)
Error	0.40	0.61
Bisyllabic		
RT	741 (82)	742 (80)
Error	0.85	0.32

19 The main effect of priming condition was significant only by items ($F1(1, 86) = 2.36$, $p = .13$; $F2(1, 43) = 59.93$, $p < .001$). RTs were shorter in the " bisyllabic priming" condition (742 ms) than in the "monosyllabic" priming condition (770 ms). The effect of prime type was reliable by participants and approached significance by items ($F1(1, 86) = 6.66$, $p < .05$; $F2(1, 43) = 3.63$, $p = .06$). Targets preceded by related primes (752 ms) were responded to faster than targets preceded by control primes (759 ms). The interaction between prime type and priming condition was significant by participants and by items ($F1(1, 86) = 9.05$, $p < .01$; $F2(1, 43) = 4.67$, $p < .05$).

20 Planned comparisons were conducted to assess the effect of priming in each priming condition. A priming effect was observed only in the "monosyllabic" priming condition. Responses to targets were 15 ms faster when they were preceded by the related primes in comparison with the control primes. This effect was significant by participants and by items ($F1(1, 86) = 15.98$, $p < .001$; $F2(1, 43) = 9.12$, $p < .01$). No priming effect was observed in the " bisyllabic priming" condition ($F1$ and $F2 < 1$).

21 To summarize, Experiment 1 replicates the results previously described by Spinelli et al. (2001) and indicates that phonological priming was only observed when there was no phonemic incompatibility between the primes and the targets (cou /ku/ - coulisse /kulis/). When the primes included phonemes not shared with the targets (couture /kutyR/- coulisse /kulis/), no effect occurred. Although some of the stimuli used in Experiment 1 were identical to those used by Spinelli et al., most of them (59%) were different. Hence, the effect appears to be robust even if the size of the facilitation effect observed in the "monosyllabic" priming condition is rather small (15 ms in Experiment 1; 19 ms in Spinelli et al.).

22 To account for the findings, Spinelli et al. (2001) proposed that higher level of activation is associated with the targets when preceded by monosyllabic primes, because there is no phoneme in the primes (cou /ku/) that is likely to deactivate the target words (coulisse / kulis/). Nonetheless, monosyllabic and bisyllabic primes also differ regarding to the relationship with their subsequent related target words. In the case of "monosyllabic" primes, the relation between the primes and the targets is particularly salient in that the primes (cou /ku/) always form the first syllable of the subsequent related target words (coulisse /kulis/). In contrast, in the case of "bisyllabic" primes, the relationship between the primes and the targets is less obvious due to the need to segment both the prime and the target words in order to perceive the critical first syllable ("couture /kutyR/ - coulisse /kulis/"; see Slowiaczek, Soltano, Wieting & Bishop, 2003). Hence, participants could have exploited the specific relationship between monosyllabic primes and bisyllabic targets to improve their performance. So, the aim of Experiment 2 was to test for the residual activation hypothesis using conditions less prone to the use of the relationship between the primes and targets.

23 In Experiment 2, we examined whether target word frequency is an important factor in determining the amount of residual activation of the target after processing of the prime. To reduce the opportunity for participants to take advantage of the relationship between the primes and the targets, bisyllabic primes were used, as in the "bisyllabic" priming condition of Experiment 1. In contrast to Experiment 1 in which all the targets were of low frequency, the bisyllabic target words of Experiment 2 were either high or low frequency words. Because high frequency words are assumed to have a higher activation than low frequency words, activation of high frequency targets caused by the primes would not have the time to fully dissipate before their presentation. Hence, greater priming effect for high than for low frequency words was expected.

24 Thirty-six students were recruited from the same pool as in the previous experiment.

25 Fifty-six bisyllabic target words were selected. Half were high frequency words (mean logarithmic frequency of 4.63; range: 4.31-5.53), and the remaining were low frequency words (mean logarithmic frequency of 2.55; range: 0.60-3.77). Both set of targets were matched for syllable neighborhood density[3] (in average 203 and 158 for the high and the low frequency words, respectively; $F(1, 54) = 0.86$, $p > .20$).Two bisyllabic primes were paired with each of the 56 target words. One shared the first syllable with the targets (soucoupe /sukup/ – sourire /suRiR/), and the other used as a control, had no phoneme in common with the target (piquet /pikɛ/ – sourire /suRiR/). For the high frequency targets, the mean logarithmic frequencies of related and control primes were 2.59 and 2.62, respectively. For the low frequency targets, the corresponding values were 2.54 and 2.55, respectively. The frequencies of related and control primes did not differ significantly. The prime-target pairs are provided in Appendix B.

26 The average durations of targets were 542 and 533 ms for the high and the low frequency words, respectively. For the high frequency targets, the average durations of related and control primes were 543 and 542 ms, respectively. For the low frequency targets, the corresponding values were 501 and 526 ms, respectively. The durations of related and control primes did not differ significantly. As in Experiment 1, the proportion of related trials were of 25%. Since the targets were paired with two types of primes, two experimental lists were also created. The procedure was the same as in Experiment 1.

27 Mean RTs for correctly shadowed items and mean error rates are presented in Table 2. Because few errors occurred, analyses were performed on RTs only. ANOVAs were conducted with prime type (related, control) and frequency (high, low) as variables.

Table 2: Mean Reaction Times (in ms) and Error Rates (in %) for Control and Related Primes as a function of Target Word Frequency in Experiment 2 (Standard Deviations are given in parentheses)

	Prime Type	
	Control	Related
Frequency		
High		
RT	782 (86)	759 (84)
Error	0.20	0.60
Low		
RT	788 (103)	787 (93)
Error	1.98	2.38

28 The main effect of frequency was significant only by participants ($F1(1, 35) = 13.63$, $p < .001$; $F2(1,54) = 1,41$, $p > .20$). High frequency words (771 ms) were responded to faster than low frequency words (788 ms). As we will discuss below, the failure to observe a significant difference in the item analysis could result from variability in word durations between the two frequency groups. The main effect of prime type was significant by participants and by items ($F1(1,35) = 4.82$, $p < .05$; $F2(1,54) = 9.36$, $p < .01$). Targets preceded by related primes (773 ms) were responded to faster than targets preceded by control primes (785 ms). The interaction between frequency and prime type was significant both by participants and by items ($F1(1, 35) = 5.21$, $p < .05$; $F2(1,54) = 8.89$, $p < .01$).

29 Planned comparisons were conducted to assess the effect of priming in each frequency condition. A priming effect was observed only for the high frequency words. Responses to targets were 23 ms faster when they were preceded by the related primes in comparison with the control primes. This effect was significant both by participants and by items ($F1(1, 35) = 7.48$, $p < .01$; $F2(1,54) = 18.25$, $p < .001$). No priming effect was observed for the low frequency words ($F1$ and $F2 < 1$).

30 In our word stimulus set, high frequency words were slightly longer (by 9 ms, on average) than low frequency words. Because RTs were measured from the onset of the target words, such a difference in overall word duration could affect shadowing performance. Hence, a separate analysis using word durations as a covariate was also performed on the item data. The frequency effect was significant ($F(1, 53) = 4.20$, $p < .05$), thus suggesting that the effect was initially masked by the slight difference in word durations between the high and low frequency words. The main effect of prime type ($F(1, 53) = 4.82$, $p < .05$) and the interaction between frequency and prime type ($F(1, 53) = 9.14$, $p < .01$) were still reliable.

31 As in the Spinelli et al. (2001) study, we found evidence for facilitation priming effects when the primes and the targets begin with the same phonemes in a condition intended to discourage the development of strategic processes (with a low proportion of related pairs and a short ISI). Experiment 1 replicated the observation by Spinelli et al. that the processing of bisyllabic target words was facilitated by monosyllabic primes but not by bisyllabic primes. According to the authors, such results indicate that the magnitude of the priming effect is related to the amount of residual activation of the target words after processing of the primes. Given this assumption, we predicted that bisyllabic primes could also produce facilitation priming effect when the frequency of the target words was

increased. Indeed, in such a case, residual activation of target words should not have the time to fully dissipate before their presentation due to higher levels of activation. In line with this prediction, facilitation priming effect was observed in Experiment 2 with high frequency but not with low frequency words. The observation that facilitation priming effect occurs for high but not for low frequency words (Experiment 2) is particularly important since it suggests that the effect is not the result of strategic anticipations, with participants succeeding at anticipating the first syllable of targets. Indeed, in such a case, there is no reason to expect greater facilitation for high than for low frequency target words since exactly the same overlap occurred in the two frequency groups. Also, it could be noted that the primes and the targets were pronounced at a fast rate, which generally gives less opportunity for strategies to develop (see Radeau, Morais, Mousty, & Bertelson, 2000).

32 The data of this research raise the question of why facilitation was not obtained in previous initial form priming studies when using a low proportion of related trials and a short ISI (Hamburger and Slowiaczek, 1996, 1999). One possible explanation relates to the nature of the phonological overlap. In Hamburger and Slowiaczek's (1996, 1999) studies, monosyllabic prime and target pairs overlapped by the first or the first two phonemes. In contrast, in our study as well as that of Spinelli et al. (2001), bisyllabic target words sharing the first syllable with their preceding primes were examined. Note that in a more recent study, Slowiaczek et al. (2003) also reported facilitation priming effects with a syllabic overlap between primes and targets. Hence, it appears that initial overlap facilitation depends heavily on whether the primes and targets share syllabic information. Other works are nonetheless required to address further this question.

33 In summary, the present study provides evidence for facilitation priming effects when the primes and the targets begin in the same way in a condition that minimizes the development of strategic processes. These findings conflict with previous studies of phonological priming that showed that initial overlap facilitation did not occur when a low proportion of related trials and a short ISI were used (Hamburger & Slowiaczek, 1996, 1999). Nonetheless, our study reveals that the frequency of the target words is a determining factor for the observation of facilitation effects, at least for bisyllabic prime-target pairs. Although other factors might be responsible for the difference observed between mono and bisyllabic primes, the results obtained using bisyllabic words provide some support for the view that when strategic factors are minimized —by the mean of a low proportion of related trials and a short ISI—, initial overlap facilitation results from automatic lexical activation (Spinelli et al., 2001).

	Monosyllabic Priming		Bisyllabic Priming	
Targets	Related Primes	Control Primes	Related Primes	Control Primes
cartable	car	tête	carpette	pistache
corbeau	cor	jeune	cornet	briquet
coulisse	cou	fond	couture	lacune
critique	cri	blanc	crinière	fermoir
poubelle	pou	gain	poussin	ticket
tournage	tour	chef	tourteau	cagoule
troupeau	trou	juge	troubler	calcul
verveine	ver	chose	verger	notaire
pincette	pin	nid	pingouin	frelon
parcours	par	bien	parcelle	naufrage
mouchoir	mou	bain	mourant	buffet
chardon	char	fade	chargeur	séchoir
dégaine	dé	île	déclic	lavoir
soudure	sou	vue	souillon	patin
boisson	bois	pur	boiteux	rosier
cassure	cas	beau	cavale	girafe
massage	ma	long	mammouth	gourdin
voltige	vol	nerf	volcan	carence
passeport	passe	tige	passerelle	fermier
boutique	boue	main	bouquet	mouton
drapeau	drap	caisse	dragon	moisson
moustique	mousse	arc	mousseline	bracelet
calepin	cal	tube	calmant	punaise
litige*	lit	doux	livret	piéton
pivert	pie	chou	pipette	clapet
ordure	or	fou	orbite	cantine
rouleau	roue	sceau	rougeur	baguette
censure	cent	bas	centime	fougère
poteau	pot	dos	polaire	lavande
bonbonne	bon	fin	bonder	nougat
barbiche	bar	clou	barman	pédale
chausson	chaud	lait	chauffage	boudoir
merveille	mer	face	mercure	festin
bandeau	banc	fée	banquet	marron
mondain	mon	temps	montant	cadeau
ragoût	rat	ange	rameur	biberon
rancœur	rang	aide	rançon	otage
rideau	riz	âne	richesse	chagrin
fourneau	four	plomb	fourgon	rapace
coursier	cours	plan	courbure	bandelette
poison*	pois	chaise	poignet	malaise
loufoque	loup	œuf	louper	soda
local	lot	baie	loger	boucher
jupon	jus	faon	jumelle	lézard
palace	pas	dent	parade	liqueur
rondin	rond	chat	rongeur	sacoche

*: Items excluded from the analyses.

	High Frequency		Low Frequency		
Targets	Related primes	Control Primes	Targets	Related primes	Control Primes
visage	vidange	parure	cartable	carpette	pistache
travail	trapèze	vigile	corbeau	cornet	briquet
sujet	support	vanille	coulisse	couture	lacune
sourire	soucoupe	piquet	poubelle	poussin	ticket
silence	sirop	oseille	tournage	tourteau	cagoule
savoir	sapin	gibier	verveine	verger	notaire
regard	refrain	dicton	parcours	parcelle	naufrage
rapport	râteau	tulipe	mouchoir	mourant	buffet
profond	prothèse	tirage	chardon	chargeur	séchoir
pouvoir	poulain	gachette	dégaine	déclic	lavoir
personne	perdrix	coupure	soudure	souillon	patin
penser	pendule	malice	cassure	cavale	girafe
passer	panneau	coussin	massage	mammouth	gourdin
partir	parquet	mirage	boutique	bouquet	mouton
parole	palette	layette	calepin	calmant	punaise
parler	parnasse	couplet	litige	livret	piéton
nature	narine	fourmi	pivert	pipette	clapet
minute	milice	dragée	ordure	orbite	cantine
milieu	mineur	chalet	rouleau	rougeur	baguette
matin	marelle	crevette	censure	centime	fougère
manière	maquette	pigment	barbiche	barman	pédale
laisser	laitage	maussade	ragoût	rameur	biberon
famille	falaise	semer	rancoeur	rançon	otage
esprit	escroc	puma	rideau	richesse	chagrin
devoir	degré	morceau	fourneau	fourgon	rapace
conscience	congrès	sorcier	poison	poignet	malaise
secret	semelle	tambour	jupon	jumelle	lézard
armée	argile	poumon	palace	parade	liqueur

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NOTES

1. Note that the effect of bisyllabic primes was not examined in unimodal situation (auditory prime and target).
2. We thank Louisa Slowiaczek for this suggestion.
3. Syllable neighborhood density corresponds to the number of words that share the first syllable with the target. Note that in Experiment 2, target words from dense syllable neighborhoods (more than 30 neighbors) were selected. Indeed, preliminary studies (unpublished data) indicate that in a shadowing task, facilitatory priming effect is more likely to occur when the target words have many neighbors. Adopting this criterion, only 28 of the prime-target pairs from the “bisyllabic” priming condition of Experiment 1 were re-used in the low frequency condition of Experiment 2.

ABSTRACTS

Two experiments examined the facilitation that occurs when prime and target words share initial phonemes in a shadowing task using 25% of related prime-target pairs and 50 ms ISI. Experiment 1 replicated the results described by Spinelli, Segui and Radeau (2001) showing that the processing of bisyllabic target words (coulisse /kulis/) was facilitated by monosyllabic primes (cou /ku/) but not by bisyllabic primes (couture /kutyR/). In Experiment 2, we extended the results of Spinelli et al. and observed that bisyllabic primes produce reliable facilitatory priming effect when the targets are high frequency words but not low frequency words, thus suggesting that frequency is a critical factor in determining facilitation priming effects.

Utilisant une tâche de Shadowing, nous avons examiné dans deux expériences, les effets facilitateurs du recouvrement phonologique, lorsque des amorces et des cibles partagent les premiers phonèmes. Sous des conditions expérimentales incluant 25 % de paires amorces et cibles reliées et un ISI de 50 ms, nous avons répliqué dans l'Expérience 1, les résultats de Spinelli, Segui et Radeau (2001). Une facilitation de traitement a été observée lorsque des mots-cibles bisyllabiques (coulisse) étaient précédés d'une amorce monosyllabique (cou) mais pas lorsqu'ils étaient précédés d'une amorce bisyllabique (couture). Dans l'Expérience 2, nous avons étendu les résultats de Spinelli et al. et montré qu'une facilitation est susceptible d'être observée avec des amorces bisyllabiques, lorsque les mots-cibles sont de haute fréquence mais pas lorsqu'ils sont de basse fréquence. Les résultats suggèrent que la fréquence des mots est un facteur important pour l'observation d'effets facilitateurs.

INDEX

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AUTHORS

SOPHIE DUFOUR

L. E. A. D. - C. N. R. S. Université de Bourgogne, Pôle AAFE, BP 26513, 21065 Dijon Cedex, France
sophie.dufour@leadserv.u-bourgogne.fr

RONALD PEEREMAN

University of Bourgogne & C.N.R.S, Dijon, France